Millennium Milestones

As USDA looks toward the next century and millennium, we also look back to the rich past of American agriculture. The Millennium Milestones in this ***Agriculture Fact Book*** observe key historic markers that are the background leading up to some important issues that USDA faces every day–from production agriculture to nutrition, from soil surveys to food safety, from education to animal health, and from agricultural research to rural development. This look backward can help us to look forward with better awareness as we meet the challenges of the new millennium.

Soil Surveys

- 1830 Massachusetts became the first State to perform a soil survey.
- 1894 Secretary of Agriculture, J. Sterling Morton, establishes the Division of Agricultural Soils in its Weather Bureau; Milton Whitney is named as Chief of the Division.
- 1899 The National Cooperative Soil Survey established, creating a program of shared responsibilities and costs among Federal, State, and local soil districts.
- 1901 The Division of Soils is reorganized as the Bureau of Soils. 100 soil types had been identified, bearing names that combined information on the types' location and texture–such as Jordan sandy loam.
- 1904 400 soil types had been identified, and additional soil characteristics, including color and organic matter content, were adopted as bases for differentiating soil series.
- 1907 First use of official soil survey for land appraisal and tax assessment in Glenn County, CA. By 1912, this type of soil interpretation had received official recognition and support from the National Tax Association.
- 1909 715 soil types identified.
- 1911 The first USDA circular on soils, titled *Soils of the Eastern United States and Their Use*, published.
- 1912 1,650 soil types identified.
- 1920's Michigan uses soil survey data to plan road and highway development.
  - Soil erosion identified as serious threat to agricultural productivity.
  - Ten regional erosion experiment stations set up.
  - Increase in the quality and precision of the base maps, and the inception of aerial photography in soils mapping, increased the precision of plotting boundaries.
- 1930's Soil surveys used by the Bureau of Reclamation in planning large-scale irrigation and reclamation projects.
- 1935 Soil Conservation Act establishes a Soil Conservation Service (SCS) at USDA to carry out a continuing program of soil and water conservation.

- 1950's Soil survey finds increasing application in land use planning as the Nation urbanizes. Soil survey division samples soils internationally to test residual radioactivity resulting from above-ground nuclear testing.
- 1952 Secretary's Memorandum 1318 consolidated all soil survey work of the Department—including mapping, classification, correlation, interpretation, laboratory services, map compilation, and publication—and placed the activity in SCS.
- 1966 Public Law 89-560 gave firm authority to the soil survey to provide information for public and private entities for use in nonagricultural planning and resource development.
- 1985 Soil survey interpretations used to support land designations for the 1985 Farm Bill compliance provisions.
- 1990's The soil survey enters an era of dynamic, multilayered databases useful for site-specific analyses. The National Soil Information System (NASIS) becomes available as an online tool.

Nutrition Research and Nutrition Guidance

- 1796 Lemon juice introduced in British Navy to prevent scurvy.
- 1888 W.O. Atwater named as Chief of the newly organized Office of Experiment Stations at USDA; he and others construct the first calorimeter.
- 1894 USDA publishes Farmers' Bulletin giving the first dietary recommendations (Specific vitamins and minerals have not been discovered.). Dietary guidelines will continue to be revised as the science base evolves.
- 1899 USDA publishes compilation of the composition of a large number of foods (forerunner of Handbook 8, classic tables of food composition).
- 1900 By the turn of the 20th century, scientists had identified protein, fat, and carbohydrates as the basic nutrients in food.
- 1902 Atwater linked dietary intake to health, noting that "the evils of overeating may not be felt at once, but sooner or later they are sure to appear–perhaps in excessive amount of fatty tissue, perhaps in general debility, perhaps in actual disease."
- 1912-24 Relationship identified between "accessory food factors" (vitamins) and dietary deficiency syndromes, such as scurvy and beriberi.
- 1913-16 Discovery of vitamins A and B.
- 1916 The first USDA food guide, *Food for Young Children*, appears, listing five groups (milk and meat, cereals, vegetables and fruits, fats and fatty foods, and sugars and sugary foods).
- 1917 USDA issued *How To Select Foods*—the first dietary recommendations for the general public—based on same five food groups.
- 1921 Guide released using same five food groups but adding suggested amounts of foods to purchase each week for the average family.
- 1921-24 Blindness in children shown to be a result of lack of vitamin A.
- 1922-27 With the implementation of a statewide prevention program, the goiter rate in Michigan fell from 38.6 percent to 9 percent.

- 1922 Vitamin D identified in cod liver oil.
- 1924 Iodine was added to salt to prevent goiter.
- 1930's The Federal Government developed food relief and food commodity distribution programs, including school feeding and nutrition education programs and national food consumption surveys.
- 1932 Vitamin C isolated from lemon juice.
- 1933 USDA publishes food plans at four cost levels to help people shop for food, including 12 major food groups, to buy and use in a week to meet nutritional needs.
- 1938 Amino acids classified as essential and nonessential.
- 1940's Fortification of milk with vitamin D was a critical step in rickets control. Pellagra virtually eliminated by enriching flour with niacin.
- 1941 President Franklin D. Roosevelt convened the National Nutrition Conference for Defense, which led to the first Recommended Dietary Allowances of nutrients and resulted in the issuance of War Order Number One, a program to enrich wheat flour with vitamins and iron.
- 1941 Evidence provided for the influence of prenatal diet on the health of the newborn infant.
- 1943 Basic Seven food guide released as the National Wartime Nutrition Guide (which was updated as National Food Guide in 1946).
- 1949 Framingham study of coronary heart disease risk factors begins, to identify contribution of diet to development of cardiovascular disease and the effect of elevated serum cholesterol on the risk for coronary heart disease.
- 1940's First simple daily nutrition guide published.
- 1956 USDA published new food guide, the Basic Four, that recommended minimum number of foods from the four food groups–milk, meat, fruits and vegetables, and grain products; it was widely used for the next 2 decades.
- 1970's Food and nutrition labeling and other consumer information programs stimulated the development of products low in fat, saturated fat, and cholesterol.
- 1977 *Dietary Goals for the United States*, published by Senate Select Committee on Nutrition and Human Needs, shifted focus of dietary guidance from obtaining adequate nutrients to avoiding excessive intake of some foods.
- 1979 Publication of *Food* began to address the role of fats, sugars, and sodium in risks for chronic disease. The Basic Four food groups addition of a fifth group–fats, sweets, and alcoholic beverages–targeted for moderation.
- 1980 USDA and the U.S. Department of Health and Human Services published first edition of *Nutrition and Your Health: Dietary Guidelines for Americans* (which has been revised every 5 years). This and subsequent editions form the basis of Federal nutrition policy and provide a consensus on what makes a healthy diet.
- 1990 Third edition of the *Dietary Guidelines* promotes healthful eating through variety and moderation, and suggests a goal of 30 percent or less of calories from fat and less than 10 percent of calories from saturated fat.

- 1990 Nutrition Labeling and Education Act of 1990 mandates use of nutrition information on virtually all packaged and processed foods.
- 1992 *Food Guide Pyramid* released.
- 1994 Nutrition Facts Label required to give consumers information on nutritional content of foods.
- 1995 New (fourth) edition of *Dietary Guidelines*, now mandated by law, was released.

Animal Health

- 1870 Foot-and-mouth disease, a severe, highly communicable viral disease of cattle, swine, sheep, goats, deer, and other ruminants, first reported in the United States. The disease spreads widely and rapidly, causing grave physical and economic consequences.
- 1882 Robert Koch discovered the bacterium that caused tuberculosis (TB) and demonstrated how it was transmitted, making it possible to diagnose the disease in cattle and facilitating the control and eradication of TB in animals.
- 1889 Bureau of Animal Industry researchers discovered the carrier of tick fever (also called cattle fever, Texas fever, and distemper of cattle). A microparasite causing Texas fever and its transmittal by cattle ticks caused a chronic health problem among southern cattle. This was the first disease to be identified in which a protozoan parasite was communicated to a mammalian species by an arthropod vector.
- 1892 Contagious bovine pleuropneumonia eradicated 49 years after its introduction into the United States. This slow-spreading contagious bacterial disease of cattle had caused severe loss of cattle and great economic harm.
- 1899 Improved method of anthrax inoculation helps eliminate this dangerous disease of warm-blooded animals (including human beings) that is caused by the spore-forming bacterium *Bacillus anthracis*.
- 1903 Hog cholera serum developed to combat a highly infectious viral disease of swine. Pigs were immunized using the serum from recovered pigs and a little of the blood of an acutely ill pig.
- 1910 35 States and territories required tuberculin testing of all entering cattle. Tuberculosis is a contagious disease of both animals and humans. In an effort to reduce TB in the children at Indian schools, the Bureau of Animal Industries began TB testing of dairy cattle herds on reservations in several States; in1910, 35 States enacted legislation to test every cow, in every herd, on every farm.
- 1929 Foot-and-mouth disease, a highly contagious viral disease of cattle, swine, sheep, goats, deer, and other ruminants, was eradicated from the United States.
- 1929 Fowl plague (a viral disease reclassified in 1950 as avian influenza) was eradicated from the United States.
- 1934 Glanders—a contagious, acute or chronic, usually fatal bacterial disease of horses—was eradicated from the United States.

- 1942 Dourine, an often chronic venereal disease of horses, was eradicated from the United States.
- 1943 The cattle fever tick, Boophilus, was eradicated from the Continental United States, and deaths of cattle from tick fever stopped. Texas fever was the first disease to be eradicated by eliminating the vector and the first major disease to be eradicated by using chemical agents directed at the vector.
- 1947 The United States began formal cooperation with Mexico to prevent spread of foot-and-mouth disease. Congress also established authority to cooperate with Mexico, Central American countries, Panama, Colombia, and Canada to control or eradicate other animal diseases.
- 1955 Sterile flies were used to control screwworm (a cattle pest that causes extensive damage to domestic livestock) by interrupting its ability to breed. Screwworms were eradicated from the entire Southeastern United States in 1959, and in 1966, they were eradicated in the Southwest and in the entire United States.
- 1959 Vesicular exanthema (VE) of swine was eradicated. This acute, highly infectious disease, first observed in California in 1932, became widespread in the United States in the 1950's. A vigorous campaign by USDA to eradicate the disease was successful.
- 1971 Eradication of Venezuelan equine encephalomyelitis (VEE), a mosquito-borne disease of all equine species that humans can also contract. After the disease entered southern Texas in 1971, Federal and State animal health officials, the U.S. military, and affected communities took swift action to control and eradicate this outbreak. Efforts included spraying 13 million acres for mosquitoes and vaccinating 2.8 million horses.
- 1973 Sheep scabies (Psoroptic mange), which had afflicted sheep husbandry for more than 2,000 years, was declared eradicated in the United States.
- 1974 Exotic Newcastle disease was eradicated after the destruction of nearly 12 million chickens. In 1971, a major outbreak of this contagious and fatal viral disease had occurred in commercial poultry flocks in southern California. Eradication efforts cost taxpayers $56 million, and the disease has not affected domestic chickens in the United States since that outbreak was eradicated in 1974.
- 1978 Hog cholera—a highly contagious viral disease of swine that had caused enormous losses to the hog industry—was eradicated from the United States after a 16-year effort by the industry and by State and Federal governments.
- 1985 Lethal avian influenza eradicated. This disease is an extremely infectious and deadly form of avian influenza virus. Eradication efforts of a 1983 and 1984 high pathogen avian influenza (HPAI) outbreak in eight Northeastern States involved destruction of more than 17 million birds and cost nearly $65 million.

Agricultural Education and Extension

- 18th century *Essays Upon Field Husbandry*, written by Jared Eliot (1685-1763) of Connecticut.
- 1785 Thomas Jefferson's *Notes on the State of Virginia* contained one of the finest detailed descriptions of agriculture in an American State and asserted the virtues of rural life.
- 1825-50 Some schools and colleges began to offer courses in agriculture and in sciences helpful to agriculture.
- 1855 Michigan and Pennsylvania passed legislation providing for establishment of Michigan Agricultural College and the Farmers High School, later Pennsylvania State College.
- 1862 The drive for agricultural education culminated in the passage of the Morrill Land Grant College Act, which provided grants of public land to every State to be sold to fund an institution of higher education.
- 1871 Cornell University College of Veterinary Medicine granted its first bachelor's degree.
- 1874 Chatauqua system of adult education founded in New York.
- 1877 The University of Illinois offered the world's first course in general bacteriology.
- 1890's Development of agricultural education in secondary schools begins in local areas and some States.
- 1890 Second Morrill Act funded land-grant colleges for blacks in States where 1862 land grants were segregated.
- 1900 First corn club for boys, forerunner of 4-H clubs.
- 1903 Seaman Knapp began boll-weevil demonstration project in Texas, an inspiration for extension education, along with mobile school project of Booker T. Washington and George Washington Carver of Tuskegee Institute.
- 1914 Smith-Lever Act passed establishing the Cooperative Extension Service system.
- 1924 Clark-McNary Act provided for forestry extension work.
- 1928 Future Farmers of America founded.
- 1935 Bankhead-Jones Agricultural Research Act more than doubled Federal support of extension work.
- 1941 Extension agents worked in every rural county in the country, including Alaska, Hawaii, and Puerto Rico.
- 1964 Federal antipoverty programs led to expansion of extension education programs to urban areas.
- 1975 University of Nebraska professors established AGNET, the Nation's first interactive computer network to exchange agricultural information. AGNET allowed users miles away to access economic and management information.
- 1977 Legislation authorized funds to conduct extension programs and activities, as well as research programs, at the 1890 institutions and Tuskegee Institute.
- 1994 The Equity in Educational Land-Grant Status Act of 1994 established 29 tribal colleges, providing an endowment fund and authorizing extension activities at these 1994 land-grant institutions.

Agricultural Production Technology

- 1793 Invention of cotton gin.
- 1794 Thomas Jefferson's moldboard plow tested.
- 1797 Charles Newbold patented first cast-iron plow.
- 1819 Jethro Wood patented iron plow with interchangeable parts.
- 1834 McCormick reaper patented.
- 1834 John Lane began manufacturing plows faced with steel saw blades.
- 1837 John Deere and Leonard Andrus began manufacturing steel plows.
- 1837 Practical threshing machine patented.
- 1841 Practical grain drill patented.
- 1844 Practical mowing machine patented.
- 1849 Mixed chemical fertilizers sold commercially.
- 1856 2-horse, straddle-row cultivator patented.
- 1862-75 Change from hand power to horses characterized the first American agricultural revolution.
- 1868 Steam tractors tested.
- 1869 Spring-tooth harrow for seedbed preparation appeared.
- 1870's Silos came into use.
- 1870's Deep-well drilling first widely used.
- 1874 Glidden barbed wire patented. Availability of barbed wire allowed fencing of rangeland, ending era of unrestricted, open-range grazing.
- 1884-90 Horse-drawn combine used in Pacific coast wheat areas.
- 1890-95 Cream separators came into wide use.
- 1910-15 Big open-geared gas tractors came into use in areas of extensive farming.
- 1930's All-purpose, rubber-tired tractor with complementary machinery came into wide use.
- 1942 Spindle cotton picker produced commercially.
- 1945-70 Change from horses to tractors and the adoption of a group of technological practices characterized the second American agriculture revolution.
- 1954 Number of tractors on farms exceeded the number of horses and mules for the first time.
- Late 1950's–1960's Anhydrous ammonia increasingly used as cheap source of fertilizing nitrogen.
- 1965 99 percent of sugar beets harvested mechanically.
- 1968 96 percent of cotton harvested mechanically.
- 1970's No-till agriculture popularized.

Government Programs and Policy

- 1776 George Washington suggested to Congress the establishment of a National Board of Agriculture.
- 1819 New York State Board of Agriculture set up by State legislature.
- 1820 Agriculture Committee established in U.S. House of Representatives.
- 1825 Agriculture Committee established in U.S. Senate.
- 1839 $1,000 appropriated for Patent Office work with agricultural statistics.
- 1853 New York appointed first State entomologist.
- 1862 USDA set up without Cabinet status "to acquire and to diffuse among the people of the United States useful information on subjects connected with agriculture in the most general and comprehensive sense of that word…"
- 1874 Georgia set up the first State Department of Agriculture.
- 1889 USDA raised to Cabinet status.
- 1890, 1891, 1906 Meat Inspection Acts establish Federal program for certifying safety and quality of meats.
- 1893 Office of Road Inquiry organized at USDA to run demonstration and education programs.
- 1897 Greater emphasis in Federal agriculture program given to plant exploration and to increasing agricultural production.
- 1900-1920's Federal role in regulating food safety and marketing grows with passage of Pure Food and Drug Act, Cotton Futures Act, Packers and Stockyards Act, and Grain Futures Act.
- 1906 Appointment of first county agricultural agent.
- 1922 Capper-Volstead Act encouraged the growth of rural cooperatives.
- Early 1930's First Federal assistance to school lunch programs.
- 1930 Unprecedented drought relief legislation enacted.
- 1933-40 New Deal legislation increased Federal involvement in agriculture through production control, price support, and marketing programs; credit; rural relief and resettlement; soil conservation; crop insurance; rural electrification; and other programs.
- 1935 Rural Electrification Administration organized at USDA to bring electricity to farms.
- 1939 Food stamp plan begun.
- 1949 Rural Telephone Loan program begun.
- 1956 Soil Bank Program authorized to expand conservation of fragile lands and help control production.
- 1957 Poultry Inspection Act added poultry to the list of products inspected by USDA.
- 1961 Public Law 480 extended and expanded to increase U.S. food assistance to developing countries.
- 1964 Food Stamp Act expanded earlier food stamp program and established it as a major form of Government assistance to the poor.
- 1965 Appalachian Regional Development Act established Appalachian Regional Commission, a model regional rural development program.

- 1966 President's Commission on Rural Poverty appointed to investigate conditions of the rural poor and recommend programs to alleviate poverty in rural areas.
- 1966 Child Nutrition Act established the School Breakfast Program and Special Milk Program.
- 1966-67 National Advisory Commission on Rural Poverty organized; it published *The People Left Behind*, calling attention to rural poverty.
- 1971 Rural Telephone Bank organized to finance rural telephone cooperatives.
- 1972 Rural Development Act established rural development as an important mission of USDA.
- 1973 Agriculture and Consumer Protection Act emphasized maintaining or increasing instead of controlling production, an unusual, and short-lived, goal for U.S. farm policy.
- 1975 Economic Research Service reports reversal of rural-to-urban migration during 1970-73.
- 1985 Food Security Act lowered Government farm supports, promoted exports, set up the Conservation Reserve Program, and established National Advisory Commission on Agricultural and Rural Development Policy.
- 1989 30 million acres retired under the Conservation Reserve Program.
- 1994 The Federal Crop Insurance Reform and Department of Agriculture Reorganization Act reorganizes USDA into mission areas and calls for closing or consolidating one-third of USDA's 3,700 field offices.
- 1996 Federal Agricultural Improvement and Reform Act reoriented farm programs to increase reliance on market signals by allowing flexibility in planting and by "decoupling" support payments from levels of production.

Highlights of USDA Agricultural Research

- 1863 First monthly crop report published by USDA.
- 1866 Division of Botany created to preserve herbarium material collected in various government expeditions.
- 1871 Division of Microscopy created.
- 1873 Washington navel orange introduced into California with trees secured from Brazil by USDA.
- 1875 Agricultural experiment stations established in Connecticut and California.
- 1884 Bureau of Animal Industry established.
- 1887 15 States had formally organized experiment stations.
- 1887 Hatch Experiment Station Act provides Federal funding to State experiment stations.
- 1888 First successful biological control of crop pest; Vedalia beetles imported from Australia to control fluted scale on citrus.
- 1891 First comprehensive list of animal and human parasites developed; today comprises more than 30 volumes.
- 1900 First methodical breeding of plants for disease resistance–wilt-resistant cotton.

- 1900-1910 George Washington Carver, director of agricultural research at Tuskegee Institute, pioneered in finding new uses for peanuts, sweet potatoes, and soybeans, thus helping to diversify southern agriculture.
- 1910 USDA domesticated the wild blueberry.
- 1910 Scientists demonstrated that pasteurization killed toxin-producing organisms in raw milk without destroying beneficial lactic acid bacteria.
- 1918 W.W. Garner and H.A. Allard discovered that relative day and night length control flowering, known as photoperiodism.
- 1923 Tobacco mosaic virus isolated; established that viruses cause many plant diseases.
- 1925 Purnell Act provided for experiment stations to pursue economic and sociological research.
- 1932 Use of carbon dioxide tested as a method to retard decay in fresh produce.
- 1937 Insect sterilization technique for mating disruption proposed by Edward F. Knipling.
- 1938 Agricultural Adjustment Act established four regional research centers to develop new uses for farm products.
- 1941 Deep vat fermentation developed in Peoria, Illinois, by Andrew Moyer, allowing mass production of penicillin.
- 1944 Beltsville small white turkey developed, progenitor of today's commercial turkeys.
- 1944 Discovery that plants use the red part of sunlight to launch growth changes.
- 1946 Technique developed to produce high-quality frozen orange juice concentrate.
- 1948 Time-temperature tolerance project developed nine principles for freezing vegetables–still the industry standard.
- 1950 Economical methods for producing dextran developed; first used as alternative to blood plasma in Korean War.
- 1950 First light-scattering instrument for measuring size of molecules designed.
- 1950's Process for making instant potato flakes developed.
- 1953 Agricultural Research Service created in major reorganization of USDA.
- 1953 Discovery of THPC, compound that imparts fire resistance to cotton fabrics.
- 1954 DEET (N,N-diethyl-m-toluamide) insect repellent developed.
- 1956 First nucleotide sequence of transfer ribonucleic acid (RNA) isolated and characterized.
- 1958 National Seed Storage Laboratory set up to provide long-term storage of plant germplasm.
- 1962 First commercial semi-dwarf cultivar of a cereal grain in North America produced, helping to launch the "Green Revolution."

- 1965 Durable press (permanent press) cotton textile developed.
- 1971 Viroids, the smallest known agents of plant disease, discovered by Theodor O. Diener.
- 1973 Super Slurper developed, a combination of starch and a synthetical chemical that absorbs hundreds of times its own weight in water.
- 1988 First transgenic farm animals born.
- 1989 First separation of living farm-animal sperm into male- and female-producing batches.
- 1990 Fat replacement for food—"Oatrim"—developed from carbohydrate fiber and natural enzymes.
- 1990's Biodegradable plastics developed with cornstarch.
- 1994 First genetic map of blueberry.
- 1997 Gel formulation of formic acid developed to control parasitic bee mites.
- 1998 First noninvasive live-animal test for prion disease, scrapie, invented.
- 1998 Bacterial microbe mixture, PREEMPT, developed for competitive exclusion of *Salmonella*.
- 1999 Technique developed to grow taxol-producing cells in tissue culture.
- 1999 Rapid test developed to identify antibiotic-resistant strain of *Salmonella*; reduced test time from 6 weeks to 2 hours.

Legal and Regulatory Actions on Food Safety

- 1860's Following the Civil War, foods began to be mass produced and marketed in the United States, which led to food safety concerns about the way foods were processed, handled, and packaged.
- 1880's USDA developed methods to detect food adulteration, paving the way for the Pure Food and Drug Act.
- 1891 Federal ante- and post-mortem meat inspection mandated for U.S. exports. The goal was to promote meat exports to countries by requiring certification of inspection that was comparable to that which the foreign country provided. U.S. firms could request inspection of meat for domestic markets, but the widespread use of this voluntary program was prevented by the limitation on appropriations.
- 1906 Upton Sinclair's novel, *The Jungle*, drew attention to unsanitary conditions in U.S. meat packinghouses.
- 1906 Five months after Sinclair's novel was published, the Federal Meat Inspection Act and the U.S. Federal Food, Drug, and Cosmetics Act were passed, establishing two separate administrations: the U.S. Department of Agriculture (USDA) for meat inspections, and the U.S. Food and Drug Administration (FDA) for inspections of all other foods. The Federal Meat Inspection Act established mandatory Federal inspection of all meats in interstate commerce and provided continuous inspection of successive stages of processing. The Pure Food and Drug Act prohibited misbranded and adulterated foods and drugs from interstate commerce, and provided for seizure of violative products and the imposition of criminal sanctions.

- 1938 The Food, Drug, and Insecticide Administration (later renamed the Food and Drug Administration) became a separate unit of USDA.
- 1938 Congress enacted the U.S. Federal Food, Drug, and Cosmetics Act (FDCA) extending earlier legislation. Under the FDCA, the safety, purity, and wholesomeness of the food supply is ensured primarily by provisions forbidding interstate commerce in "adulterated" food.
- 1947 Federal Insecticide, Fungicide, and Rodenticide Act enacted.
- 1952 In *Berger v. United States*, pickles held in open vats where pigeons were flying around were in violation of section 402(a)(4) of the FDCA and were condemned as adulterated, despite lack of direct evidence of pigeon contamination of vats or pickles. The courts required only that a food "may" have become defective.
- 1953 Congress gave FDA authority to inspect a plant, after written notice to the owner, without a warrant and without permission of the owner.
- 1957 In the 1950's, poultry consumption increased significantly, leading to enactment of the Poultry Products Inspection Act for poultry slaughter and processing.
- 1958 Food Additives Amendment of 1958.
- 1966 Fair Package and Labeling Act.
- 1967 Wholesome Meat Act.
- 1968 Wholesome Poultry Products Act.
- 1969 Good manufacturing practices regulations first adopted.
- 1970 Egg Products Inspection Act.
- 1974 In *American Public Health Association v. Butz, Salmonella* was ruled as a natural contaminant of food and not an adulterant that could be readily controlled.
- 1986 USDA's Processed Products Inspection Improvement Act eliminated daily Federal inspection of meat and poultry slaughter and processing plants. Federal inspection was increased at plants that were deemed to have higher health risks.
- 1990 Nutrition Labeling and Education Act.
- 1992 U.S. Ninth Circuit Court of Appeals overturned EPA's use of de minimus standard for pesticide cancer risk.
- 1993 The public interest group, Safe Tables Our Priority (S.T.O.P.), was formed by parents of children who had become ill or died from *E. coli* O157:H7 contamination in hamburgers.
- 1994 In *Texas Food Industry v. Espy*, the court ruled that *E. coli* O157:H7 is an adulterant. This meant that meat and poultry contaminated with *E. coli* O157:H7 must be destroyed.

- 1994 The Uruguay Round of the General Agreement on Tariffs and Trade was signed; it provides a framework for distinguishing protectionist regulations from legitimate Sanitary and Phytosanitary (SPS) measures by requiring all SPS measures to be science based.
- 1994 USDA required all raw (and partially cooked) meat and poultry products to carry a label explaining safe cooking, storing, and handling practices.
- 1995 The food code was revised in 1973 and, since 1995, will be updated annually because of improved information about foodborne pathogens and how to prevent associated illnesses.
- 1995 FSIS also introduced a process certification program. If a company can demonstrate that its new process will "significantly reduce" pathogens, then it can be certified.
- 1995 FDA promulgated a Hazard Analysis and Critical Control Point (HACCP) plan for seafood (*Federal Register*, December 18, 1995).
- 1996 FSIS requires that all meat and poultry slaughter and processing plants implement the pathogen reduction/HACCP system to identify hazards and critical control points in their particular production, processing, and marketing activities (*Federal Register*, July 25, 1996). HACCP focuses on identifying hazards and preventing pathogen contamination rather than detecting defective products.
- 1997 The National Food Safety Initiative has several components: a new early warning system for foodborne illness, outbreak coordination, risk assessment, bioscience research, maximizing inspections to support HACCP, improving food safety education, and a strategic plan for action.
- 1997 The Center for Science in the Public Interest petitioned FDA for warning labels about *Salmonella enteritidis* (SE) risks on shell egg cartons, and for HACCP programs on all egg-producing farms to control SE.
- 1998 New and proposed regulations for the safety of juice.
- 1998 New regulation for shell eggs.
- 1999 Regulatory guidelines cover *Listeria monocytogenes* contamination of ready-to-eat livestock and poultry products.

Statistical Profile of U.S. Farm Life

- 1893 42 percent of population lives on farms
- 1908 33 percent of population lives on farms, and 54 percent live in rural areas
- 1920 30 percent of the population lives on farms
- 1930 58 percent of all farms had cars; 34 percent had telephones, 13 percent had electricity
- 1933 10 percent of farms electrified; 26 percent of population lives on farms
- 1935 35 percent of farms electrified
- 1940 23 percent of population lives on farm; 43 percent of population lives in rural areas
- 1950 12 percent of population lives on farms
- 1954 70.9 percent of all farms had cars; 49 percent had telephones, 93 percent had electricity
- 1960 8 percent of population lives on farms
- 1970 26 percent of population lives in rural areas
- 1972 5 percent of population lives on farms
- 1975 90 percent of all farms had telephones; 98.6 percent had electricity
- 1979 99 percent of farms electrified
- 1982 3 percent of population lives on farms; 97 percent of farms have telephone service
- 1988 75 percent of U.S. counties, with 26 percent of population, are nonmetropolitan